NTU scientists develop new 'fabric' that turns body movement into electricity

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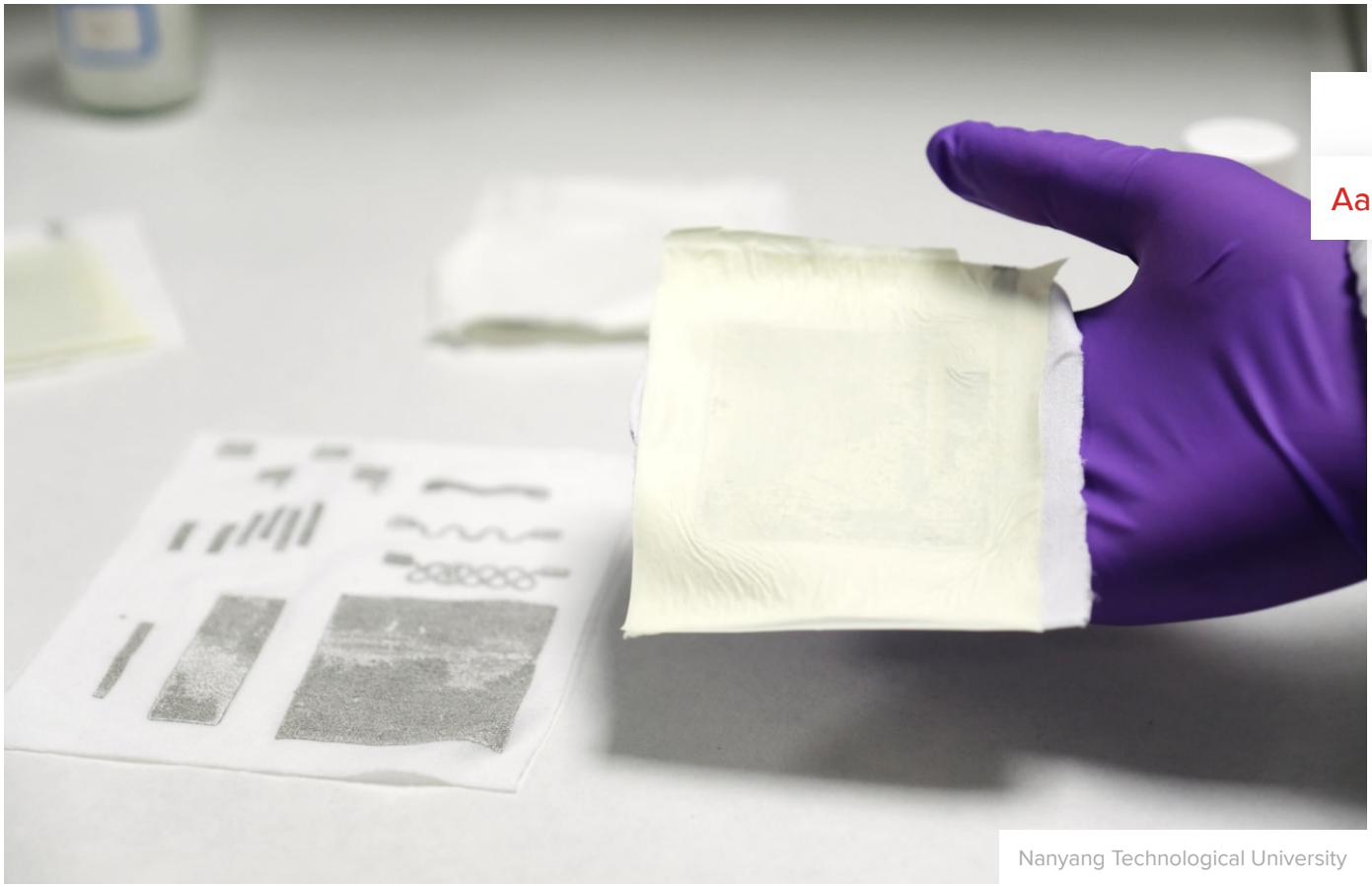

Nanyang Technological University

A stretchable and waterproof material (pictured) developed by scientists at Nanyang Technological University could one day be integrated into clothes or wearable electronics to power devices on the go.

SINGAPORE — Scientists at Nanyang Technological University (NTU) have developed a new type of fabric that can convert the body's movement into electrical energy.

The material consists of a polymer that, when pressed or squeezed, converts mechanical stre into electrical energy. It also produces electricity after coming into contact or being in friction w other materials, such as skin or rubber gloves.

In an experiment reported in the scientific journal Advanced Materials in April, the NTU scientists showed that tapping on a 3cm by 4cm piece of the fabric generated enough electrical energy to light up 100 LEDs, the university added.

The team also showed that the fabric could harness energy from a range of human movements when attached to the limbs, or to the insoles of shoes.

Aside from the polymer, the fabric also consists of stretchable spandex as a base layer and is integrated with a rubber-like material. This makes it strong, flexible, and waterproof, said NTU.

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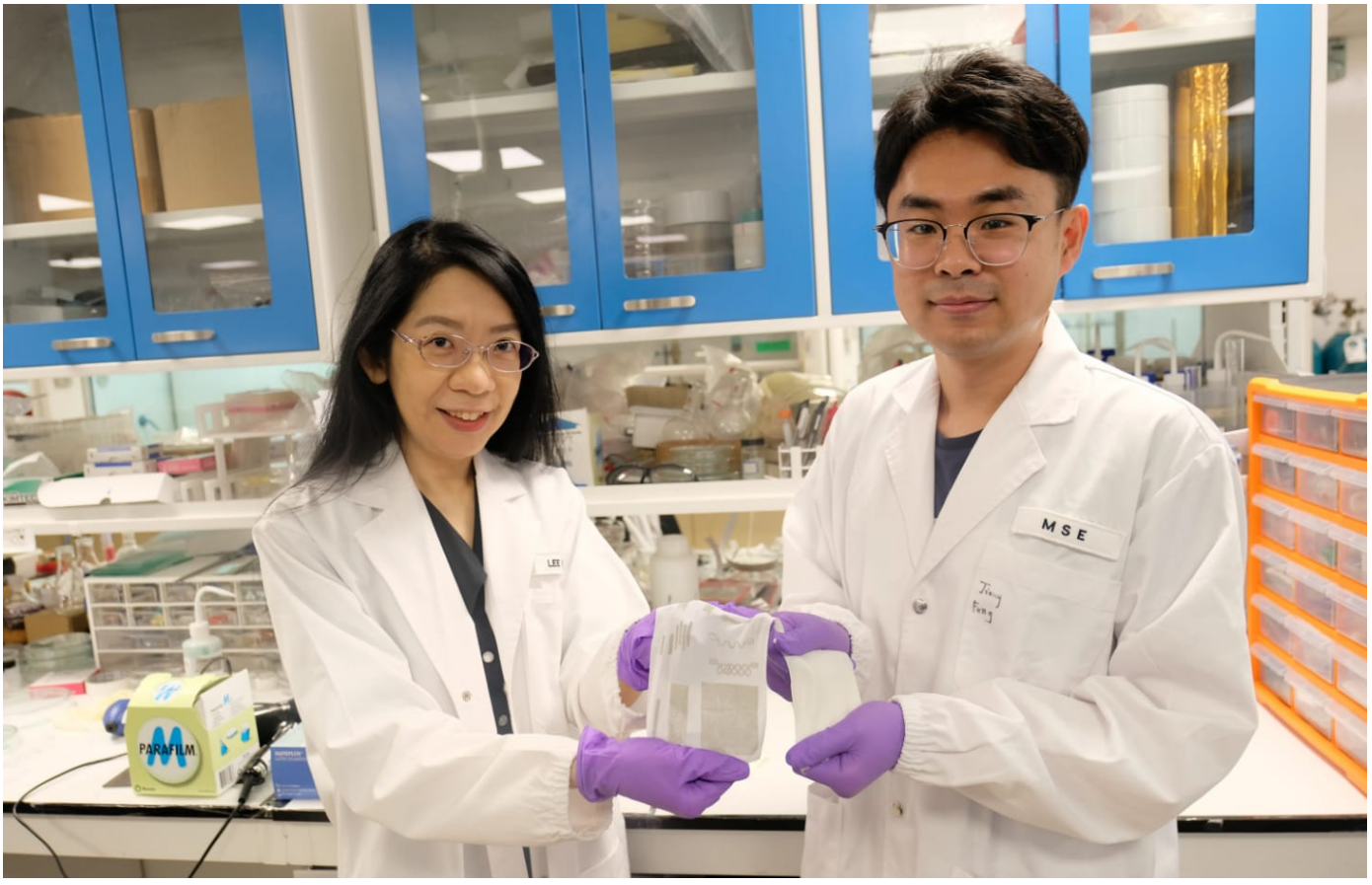

NTU scientists have developed a stretchable and waterproof 'fabric' that turns energy generated from body movements into electrical energy. From left: NTU Prof Lee Pooi See, NTU PhD student Jiang Feng.

The scientists found that washing, folding, and crumpling the fabric did not cause any performance degradation, and the material could maintain a stable electrical output for up to five months.

“There have been many attempts to develop fabric or garments that can harvest energy from movement, but a big challenge has been to develop something that does not degrade in function after being washed, and at the same time retains excellent electrical output,” said NTU Associate Provost Professor Lee Pooi See, who led the study.

The prototype fabric builds on the NTU team’s work on harnessing energy generated in the environment.

The scientists recently developed a type of film that could potentially be mounted on roofs or walls to generate energy from wind or raindrops falling onto the film.

They are now looking at how the same fabric could be adapted to harvest different forms of energy.

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